Space Weather Forecast

Issued on Monday, 14 March 2022 at 12:20 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

---

Space Weather Forecast Headline: Chance of G1/Minor geomagnetic storms on Day 1 (14 Mar), slowly declining. Chance of Moderate-class flares.

Analysis of Space Weather Activity over past 24 hours
Solar Activity: Solar activity has been Moderate over the past 24 hours, with a Moderate class flare at 14/0840 UTC from a large and fairly complex region near north centre disc. There are also four other sunspot regions on the visible disc. There is a large but stable region which will be rotating off the Earth-side of the disc towards the end of Day 2 (15 Mar). The other regions are all small and simple. There is one slow weak Coronal Mass Ejection (CME) observed on 13 March which may give a glancing blow at Earth.

Solar Wind / Geomagnetic Activity: Solar winds showed the effects of a CME which arrived at 13/1014 UTC. Solar wind speeds started the period around 500 km/s and have since declined to around 420 km/s. The Interplanetary Magnetic Field started at moderate levels and soon become strong. The important north-south component varied strongly at first, but settled strongly positive at 13/2240 UTC. Geomagnetic activity reached G1 to G2/Minor to Moderate Storm intervals (Kp 5-6) between 13/1200-14/0300, but has been Quiet to Unsettled since then.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background with no solar radiation storms occurring.

Four-Day Space Weather Forecast Summary
Solar Activity: Solar activity is expected to be mainly Low, perhaps Moderate, with a chance of Moderate-class flares. The risk of M-flares mainly comes from the large region near north centre disc, especially since it has recently developed some additional magnetic complexity.

Solar Wind / Geomagnetic Activity: Ongoing CME effects are expected to gradually decline through Day 1 into Day 2 (14-15 Mar). There is a risk of further periods of southward oriented Bz, although it is currently strongly northward directed. There is also a slight chance of a glancing blow from a weak CME on Day 4 (17 Mar). No coronal hole effects are currently expected during this period.
Geomagnetic activity is expected to be Quiet to Active, with a chance of further G1/Minor Storm intervals if we do see any further periods of negative Bz. The risk of G1 intervals declines through Day 2, with mainly Quiet activity returning, although there is a very slight chance of an increase in activity if we do see the weak CME on Day 4.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to be at background levels with no solar radiation storms, although there is just a very slight chance of an increase in response to any larger flares that may occur.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2022. All Rights Reserved.

Met Office Space Weather Forecast

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	Yes	40	20	1	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	25	25	25	25
Very Active	R3 to R5 X	No	2	2	2	2

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	2	2	2	2
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2022. All Rights Reserved.